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1.96 R3/Fxm Cop. 2 Here, on Mt. Rose, Nevada, Dr. J. E. Church made the first western snow survey 50 years ago.



# FEDERAL - STATE - PRIVATE COOPERATIVE SNOW SURVEY and WATER SUPPLY FORECASTS for

## COLORADO, RIO GRANDE, PLATTE and ARKANSAS DRAINAGE BASINS

UNITED STATES DEPARTMENT of AGRICULTURE...SOIL CONSERVATION SERVICE,

COLORADO AGRICULTURAL EXPERIMENT STATION,
STATE ENGINEER of COLORADO
and STATE ENGINEER of NEW MEXICO

Data included in this report were obtained by the agencies named above in cooperation with the U.S. Forest Service, National Park Service, Bureau of Reclamation, State Engineers of Utah and Wyoming; and other Federal, State and private organizations.

MAR. 1, 1959

#### UNITED STATES DEPARTMENT OF AGRICULTURE - SOIL CONSERVATION SERVICE

TO RECIPIENTS OF COOPERATIVE SNOW SURVEY AND WATER SUPPLY FORECAST REPORTS:

The climate of the cultivated and populated areas of the West is characterized by relatively dry summer months. Such precipitation as occurs falls mostly in the winter and early spring months when it is of little immediate benefit to growing crops. Fortunately, most of this precipitation falls as mountain snow which stays on the ground for months, melting later to sustain streamflow during the period of greatest demand during late spring and summer. Thus, nature provides in mountain snow an imposing water storage facility.

The amount of water stored in mountain snow varies from place to place as well as from year to year and accordingly, so does the runoff of the streams. The best seasonal management of variable western water supplies results from fore-knowledge of the runoff.

A snow survey consists of a series of about ten samples taken with specially designed snow sampling equipment along a permanently marked line, about 1000 feet in length, called a snow course. The use of snow sampling equipment provides snow depth and water equivalent values for each sampling point. The average of these values is reported as the snow survey measurement for a snow course.

Snow surveys are made monthly or semi-monthly beginning in January or February and continue through the snow season until April, May or June. Currently more than 1300 western snow courses are measured each year. These measurements furnish the key data for water supply forecasts.

By relating snow survey measurements taken over a period of years to spring-summer runoff during the same period, relationships have been developed which make it possible to forecast seasonal runoff several months in advance of occurrence. In order to make a forecast, once a forecast relationship has been developed, the maximum snow water content at previously selected key snow courses is usually entered in the forecast relationship. More accurate forecasts are often obtained when other factors such as soil moisture, base flow and spring precipitation are considered and included in the forecast relationships.

Listed below are the Federal-State-Private Cooperative Snow Survey and Water Supply Forecast reports available for the West which contain detailed information on snow survey measurements, streamflow forecasts, reservoir storage, soil moisture and other guide data to water management and conservation decisions.

#### PUBLISHED BY SOIL CONSERVATION SERVICE

REPORTS	ISSUED	COOPERATING WITH	LOCATION
RIVER BASINS			
COLORADO, RIO GRANDE	MONTHLY (FEBMAY)	COLO, EXP. STATION	
COLUMBIA Includes Alaska	MONTHLY (JANMAY)		BOISE, IDAHO
UPPER MISSOURI	MONTHLY (FEBMAY)	MONT.AGR.EXP.STATION	BOZEMAN, MONTANA
WEST-WIDE	(OCT. 1. APR. 1 AND MAY 1)	COOPERATORS	PORTLAND, OREGON
STATES			
ARIZONA		SALT R. VALLEY WATER	PHOENIX, ARIZONA
NEVADA	MONTHLY (FEBAPR.)	NEVADA STATE ENGINEER	RENO, NEVADA
OREGON	MONTHLY (JANMAY)	ORE.AGR.EXP.STATION	PORTLAND, OREGON
UTAH	MONTHLY (JANMAY)	UTAH STATE ENGINEERUTAH AGR.EXP.STATION	SALT LAKE CITY, UTAH
Washington	Monthly (FEBMAY)	WASH. STATE DEPT. OF CONSERVATION	SPOKANE, WASHINGTON
WYOMING	MONTHLY (FEB JUNE)	WYOMING STATE ENGINEER	CASPER, WYOMING

Copies of the various reports may be secured from: Head, Water Supply Forecasting Section Soil Conservation Service 209 S.W. 5th Avenue, Portland 4, Oregon

#### PUBLISHED BY OTHER AGENCIES

OTHER SNOW SURVEY REPORTS	
BRITISH COLUMBIA	WATER RIGHTS BR., DEPT. OF LANDS PARLIAMENT BLDGS. VICTORIA. B.C.
CALIFORNIAMONT	IA DEPARTMENT OF WATER RESOURCES.

#### FEDERAL-STATE COOPERATIVE

#### SNOW SURVEYS AND WATER SUPPLY FORECASTS

for

#### COLORADO RIVER, PLATTE RIVER ARKANSAS RIVER AND RIO GRANDE DRAINAGE BASINS

Issued

March 10, 1959

Report Prepared By
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United States Department of Agriculture
Soil Conservation Service
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Fort Collins, Colorado
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State Engineer of Colorado
Denver, Colorado
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Sherman S. Wheeler, Director Colorado Agricultural Experiment Station S. E. Reynolds State Engineer State of New Mexico

General Series Paper No. 702 Colorado Agricultural Experiment Station

Snow Survey measurements in Wyoming, Utah, and Arizona are supplied by Snow Survey Supervisors, Soil Conservation Service, in those states.

## WATER SUPPLY OUTLOOK COLORADO, RIO GRANDE, PLATTE AND ARKANSAS DRAINAGE BASINS

March 1, 1959

WATER SUPPLY OUTLOOK AS OF MARCH 1 IS AVERAGE OR BETTER EAST OF THE CONTINENTAL DIVIDE IN COLORADO AND ON THE YAMPA AND WHITE RIVERS IN NORTHWEST COLORADO. SOME DEFICIENCY MAY OCCUR ON THE GUNNISON AND COLORADO RIVERS BUT THERE WAS CONSIDERABLE IMPROVEMENT IN OUTLOOK DURING FEBRUARY. SNOW FALL TO DATE IS WELL BELOW NORMAL ON THE DOLORES, SAN JUAN AND THE RIO GRANDE. OUTLOOK CONTINUES POOR ALONG RIO GRANDE IN NEW MEXICO EXCEPT BELOW ELEPHANT BUTTE RESERVOIR.

SNOW COVER AND RUNOFF PROSPECTS ARE VERY LOW IN ARIZONA. STORED WATER IS WELL ABOVE AVERAGE AND WILL SUPPLY A MAJOR SEGMENT OF 1959 SURFACE WATER REQUIREMENTS.

COLORADO. Snow pack on watersheds east of the Continental Divide is normal or better. Carryover storage is above average particularly in larger reservoirs. Soil moisture conditions in irrigated areas are good. If snow fall during the remainder of the season is near normal or better, irrigation water may ge expected to be reasonably adequate along the Arkansas and South Platte Rivers, but not plentiful.

West of the Continental Divide the outlook is less favorable. Winter snowfall has been deficient following an extensive drouth during the mid-summer and fall months. Snow water contents measured on the headwaters of the Dolores, San Juan and Rio Grande drainages on March 1 were among the lowest of record since snow surveys were started in 1936. Unless there is a decided improvement in the rate of snow fall for the remainder of the season, runoff in these streams and their tributaries will be extremely low in 1959. The flow of the Colorado River is expected to be about 85 percent of normal and somewhat less for the Gunnison River at Grand Junction.

NEW MEXICO. The flow of the Rio Grande will be about one-half of normal through New Mexico. The deficiency of snow cover in Colorado extends over Northern New Mexico. The water supply outlook below Elephant Butte is near average because of storage. In Elephant Butte and Caballo reservoirs there is now stored 1,175,000 acre-feet or about 110 percent of the average for 1938-52. The water supply outlook for the Tucumcari Project on the Canadian River and for the Carlsbad Project on the Pecos River is good because of above normal carryover storage.

ARIZONA. Snow cover improved for Arizona during February but runoff prospects are poor. Soil moisture at high elevations is relatively good because of heavy rains during the fall months. Storage on the Salt and Gila Rivers is well above average and will supply sufficient water for the major irrigated areas.

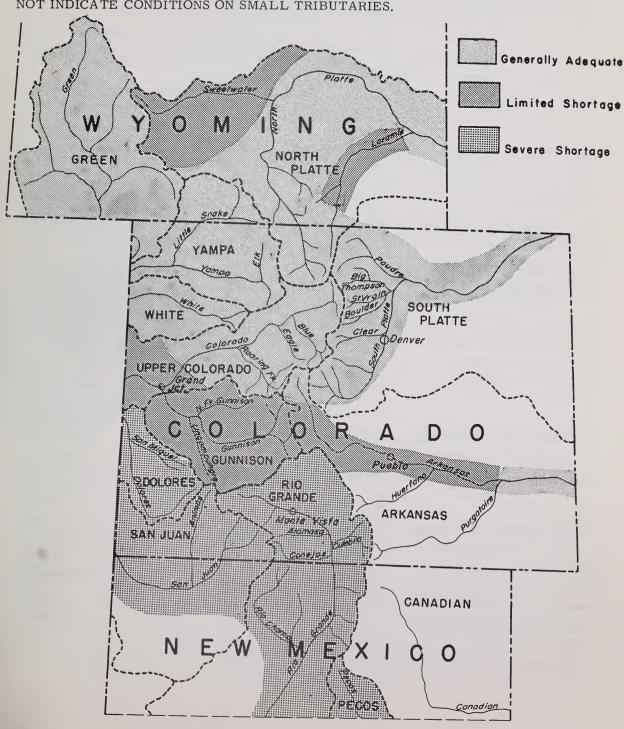
UTAH. February storms improved the water supply outlook in Utah but it is still poor in the central and southern part of the State. Streamflow is expected to be in the range near one-half of normal in this area and three-quarters of normal in Northeast Utah. Very little contribution will be made to the Colorado River.

## COOPERATIVE SNOW SURVEYS SUMMARY OF SNOW MEASUREMENTS March 1, 1959

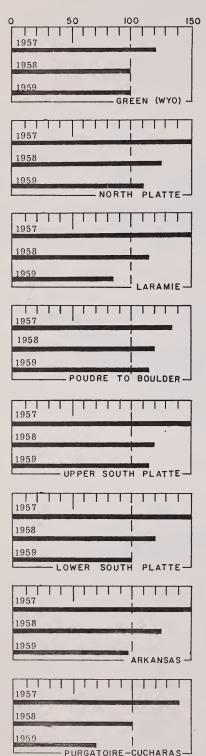
WATERSHEDS	No. of Courses	Years of	Water C		WATERSHEDS	No. of Courses	Years of	Water (	Content cent of
	Averaged	Record	1958	Avg.		Averaged	Record	1958	Avg.
ARKANSAS RIVER					PLATTE RIVER				
Arkansas River	7	9-23	94	96	Sweetwater	3	8-21	106	69
					North Platte River	8	9-23	99	95
COLORADO RIVER					Laramie River	9	10-23	89	89
Colorado River*	25	8-23	114	111	South Platte River**	3	9-22	121	135
Roaring Fork	2	23	105	115	Poudre River	6	7-22	102	106
Plateau Creek	2	19-22	62	- 90	Big Thompson River	4	8-21	140	111
Yampa River	4	20-23	103	"115	St. Vrain River	3	9-22	183	118
White River	2	20-23	96	117	Boulder Creek	2	9-22	185	174
Gunnison River	11	7-23	85	91	Clear Creek	5	7-22	119	115
Dolores River	4	10-20	76	. 86					
Green River (Wyo.)	4	7-18	112	94	RIO GRANDE				
San Juan River	6	8-22	61	56	Rio Grande (Colo.)	9	8-22	65	74
Animas River	8	8-21	57	70	Rio Grande (N. M.)	9	11-22	52	56
Gila River					Conejos River	3	10-22	. 76	56
Salt River	10	8-21	45	37	Chama River	4	18-22	52	46
Verde River	10	6-13		85	Pecos River	2	17-22	36	36
Little Colo. River	9	8-21	39	56	Canadian River	3	17-21	53	64
Williams River	2	13		225	Alamosa River	2	18-22	66	57
Lower Colo. River	4	12		111					
*Above Glenwood Sp	orings				**Above Denver				

#### WATER SUPPLY OUTLOOK

THE MAP ON THIS PAGE INDICATES THE MOST PROBABLE WATER SUPPLY AS OF THE DATE OF THIS REPORT. ESTIMATES ASSUME AVERAGE CONDITIONS OF SNOW FALL, PRECIPITATION AND OTHER FACTORS DURING THE SPRING AND EARLY SUMMER MONTHS. AS THE SEASON PROGRESSES ACCURACY OF ESTIMATES IMPROVE. IN ADDITION TO EXPECTED STREAMFLOW, RESERVOIR STORAGE, SOIL MOISTURE IN IRRIGATED AREAS, AND OTHER FACTORS ARE CONSIDERED IN ESTIMATING WATER SUPPLY. ESTIMATES APPLY TO IRRIGATED AREAS ALONG THE MAIN STREAMS AND MAY NOT INDICATE CONDITIONS ON SMALL TRIBUTARIES.



#### WATER SUPPLY OUTLOOK



Average

THE BAR CHARTS ON THIS AND THE NEXT PAGE REPRESENT GRAPHICALLY THE MOST PROBABLE WATER SUPPLY OUTLOOK FOR 1959 AS COMPARED TO 1957 AND 1958. STREAMFLOW AND OTHER FAC TORS FOR 1958 ARE PARTIALLY ESTIMATED AS FULL DATA ON WATER SUPPLY CONDITIONS ARE NOT YET AVAILABLE. ESTIMATES OF PAST CONDITIONS AND FORECASTS HAVE BEEN MADE BY THE AUTHORS OF THIS REPORT IN CONSULTATION WITH WATER OFFICIALS.

GREEN: The flow of the Green River in Wyoming will be less than average in 1959 but should be adequate to meet local needs. Snow pack near the headwaters in Wyoming is relatively heavier than near the Utah-Wyoming border.

NORTH PLATTE: Water supply on the North Platte should meet irrigation water demands for next year. Inflow to Seminoe Reservoir will probably be slightly less than normal as indicated by the March 1 snow measurements. Storage in the major reservoirs in Wyoming including the new Glendo Reservoir is now about 1,375,000 acre-feet, nearly twice normal and only slightly less than for this date in 1958. Soil moisture conditions in Eastern Wyoming are fair. In Western Nebraska soil moisture is reported as good.

LARAMIE: Snow cover on the headwaters of the Laramie River in Colorado and Wyoming is a little above normal and a year ago. Soil moisture conditions under the snow in the mountains as well as in the irrigated areas are poor. Summer streamflow will probably be a little less than normal. Reservoir storage is less than one-half of that availble a year ago, totaling 29,000 acre-feet.

POUDRE-BOULDER: Water supply outlook for the Poudre, Big Thompson and St. Vrain Rivers and Boulder Creeks will be near normal for 1959. Mountain snow pack ranges from normal to 120 percent of normal, with a small area on Boulder Creek at about 175 percent of normal. Storage in smaller irrigation reservoirs is near average and somewhat less than for a year ago. In addition to natural streamflow, there is a total of about 160,000 acre-feet in Horsetooth and Carter Lakes and about 265,000 acre feet in Granby for the Colorado-Big Thompson project. A full allotment of this supplemental water will be available.

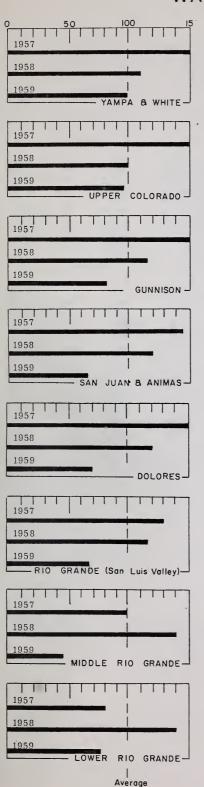
UPPER SOUTH PLATTE: Early season snow and soil moisture measurements indicate that the summer flow of the Upper South Platte and Clear Creek will be near average. Municipal reservoirs of the City of Denver may be expected to fill again this year. Storage in irrigation reservoirs is a little less than for a year ago but above normal.

LOWER SOUTH PLATTE: The water supply outlook for the lower South Platte is good. Winter streamflow is above normal and larger reservoirs are expected to fill again this year. Summer streamflow will probably be near average but this is largely dependent on rainfall and irrigation water demands on the tributaries during the irrigation season.

ARKANSAS: "Seasonal snowfall has been near normal at Tennessee Pass and Fremont Pass with about 80 percent normal snowfall near Monarch Pass and along the Sangre de Critso range to the south. Mountain soils are dry. Except for Twin Lakes, storage is better than average but not as good as for 1958. Soil moisture conditions are good for the lower valley. The general water supply outlook for the irrigated area above John Martin Reservoir is near average. With nearly 250,000 acre-feet stored in John Martin Reservoir, the outlook for irrigation water supply below the reservoir is excellent.

PURGATOIRE-CUCHARAS: The flow of the Huerfano, Cucharas and Purgatoire Rivers will be in the range of 50 to 70 percent of normal based on present snow measurements. Soil moisture conditions in valley areas are good. Much of the water supply outlook depends on later precipitation.

#### WATER SUPPLY OUTLOOK



YAMPA-WHITE: Snow pack is slightly above normal on the headwaters of the Yampa River and the White River. Soil moisture conditions in valley areas are fair. Mountain soils are dry. Water supply is expected to be adequate to meet demands on these streams this year.

UPPER COLORADO: Snow pack is about normal for this date on the Colorado River and Roaring Fork above Glenwood Springs. Summer stream flow is expected to be slightly less than normal. There may be late season shortage along small tributaries where there is no storage. Soil moisture conditions are only fair reflecting the summer and fall drouth.

GUNNISON: Water supply outlook for irrigated areas served by the Gunnison, North Fork and Uncompanded improved during February. Snow pack is now about 80 percent of normal on mountains surrounding the drainage. There may be some local water shortage in late season. Soil moisture conditions in irrigated areas are reported as good. Storage in Taylor Park Reservoir is below normal and 60 percent of a year ago but should fill with spring runoff.

SAN JUAN-ANIMAS: The snow pack on these watersheds also improved during February and now is about 60 percent of normal. Mountain soils are dry. Summer runoff is forecast at about two-thirds of normal. Water supplies will be adequate except for late season demands. Storage in Vallecito is 46,000 acre-feet and is below average and a year ago.

DOLORES: Seasonal snow pack on the Dolores watershed is better than a month ago in respect to normal. The flow of the Dolores River in 1959 is expected to be about 70 percent of average. Some shortage will  $\infty cur$  for the Montezuma irrigated area,

RIO GRANDE-SAN LUIS VALLEY: Water supply outlook has improved slightly during February with an improved snow pack in the mountains. Streamflow is forecast at about two-thirds of normal. This is in contrast to water supply conditions in 1957 and 1958 but the shortage will probably not be as severe as during the douth period of 1954-1956. Reservoir storage and groundwater levels are better than during this period. Valley soil moisture conditions are reported as fair.

MIDDLE RIO GRANDE (New Mexico): The deficiency of snowfall to date in Southern Colorado extends into Northern New Mexico. Mountain soils are dry. Storage is less than normal. The water supply outlook through the middle Rio Grande Valley and for the small tributaries in Northern New Mexico is poor.

LOWER RIO GRANDE: Inflow to Elephant Butte during the summer season as 1959 is expected to be less than half of normal. Storage in Elephant Butte and Caballo Reservoirs totals about 1,200,000 acre-feet which is about 110 percent of normal and greater than for any recent year. Even if inflow is low, total water supply should meet average demands this year.

Water supply outlook is good for the Tucumcari Project on the Canadian River and for the Carlsbad Project on the Pecos River. As with the Lower Rio Grande, streamflow is expected to be below normal but carryover storage is well above normal and a year ago.

FOR DETAILS ON WATER SUPPLY CONDITIONS ON THE COLORADO RIVER DRAINAGE IN UTAH AND ARIZONA, NOT LISTED OR DISCUSSED IN THIS REPORT, REFERENCE SHOULD BE MADE TO THE STATE SNOW REPORTS FOR UTAH AND ARIZONA (see inside cover).

#### STREAMFLOW FORECASTS

#### APRIL-SEPTEMBER INCLUSIVE March 1, 1959

"The following summarized runoff forecasts are based principally on mountain snow cover and on the assumption that precipitation and temperature during the forecast period will be near average. Appreciable deviations from normal of temperature and/or precipitation during the forecast period will correspondingly modify these forecasts."

	Forecast 1000 AF		15-Yr. Avg. 1938-52	BASIN AND STREAM	Forecast 1000 AF	%Avg. 1938-52	15-Yr. Avg. 1938-52
NORTH PLATTE				COLORADO			
Sweetwater at Alcova			86	Gunnison at Gr. Junction	1200	80	1510
North Platte at Saratoga			657	San Juan at Rosa, N.M.	450	64	703
Medicine Bow near Hanna			111	Piedra at Piedra	150	70	215
Laramie at Jelm	85	81	105	Los Pinos nr Bayfield (7)	160	70	228
				Florida nr Durango	45	65	69
SOUTH PLATTE				Animas at Durango	360	69	522
Cache La Poudre at Canon (1)	220	100	220	La Plata at Hesperus	20	67	30
Big Thompson at Drake	100	90	111	Dolores at Dolores	225	.72	314
Saint Vrain at Lyons	95	108	88	Colorado nr Grand	7500	75	10,069
Boulder at Orodell	70	127	55	Canyon, Arizona			
Clear Creek at Golden (2)	155	110	141	, , , , ,			
.,				GREEN RIVER			
ARKANSAS				Green at Linwood, Utah			1302
Arkansas at Salida (3)	300	93	323	Little Snake at Lily	300	82	365
Arkansas at Pueblo (3)	300	75	401	Elk at Clark	180	84	214
Cucharas at La Veta	12	75	16	Yampa at Steamboat Spgs.	270	96	281
Purgatoire at Trinidad	40	71	57	White at Meeker	325	97	,,336
COLORADO				RIO GRANDE			
Colorado nr Granby (4)	220	110	199	South Fork at South Fork	80	61	132
Willow nr Granby	37	87	43	Rio Grande at Del Norte (8)	350	62	565
Blue abv Green Mt. Res.	300	97	307	Alamosa above Terrace Res		64	78
Colorado at Glenwood Spgs. (5	5) 1350	88	1540	Conejos at Mogote	140	64	220
Roaring Fork at Glenwood (6	,	90	777	Culebra at San Luis (9)	20	57	30
Plateau Creek at Collbran	50	81	62	Rio Chama nr La Puente	130	49	265
Uncompangre at Colona	135	80	170	Costilla at Costilla	18	53	34
Surface Cr. nr Cedaredge	14	78	18	Rio Grande at Otowi Bridge		44	851
				Rio Grande at San Marcial (		32	619
				Pecos at Pecos	25	40	62

- Observed flow minus diversions from Michigan, Colorado and Laramie Rivers, plus diversions for irrigation and municipal use.
- (2) Observed flow minus diversions through Jones Pass Tunnel.
- (3) Observed flow plus change in storage in Clear Creek, Twin Lakes and Sugar Loaf Reservoir's minus diversions through Busk-Ivanhoe and Twin Lake Tunnels and Ewing, Fremont Pass, Wurtz and Columbine Ditches.
- (4) Observed flow plus diversions by Adams tunnel and Grand River ditch plus change in storage in Granby Reservoir.
- (5) Observed flow plus the changes as indicated in (4) plus Moffat Ditch.

- (6) Observed flow plus diversion through Twin Lakes tunnel.
- (7) Observed flow plus changes in Vallecito Reservoir.
- (8) Observed flow plus change in storage in Santa Maria, Rio Grande, and Continental Reservoir.
- (9) Observed flow plus changes in storage in Sanchez Reservoir.
- (10) Observed flow plus changes in storage in Santa Maria, Rio Grande, Continental, Terrace, Sanchez, Platoro and El Vado Reservoirs.

#### STATUS OF RESERVOIR STORAGE

March 1, 1959

	USABLE	US	ABLE S 1000 A.	TORAGE F.		USABLE	USA	ABLE ST 1000 A. I	
RESERVOIR	CAPACITY 1000 A.F.	1959	1958	15-yr. Avg. 1938-52	RESERVOIR	CAPACIT 1000 A.F.		1958	15-yr. Avg 1938-52
	1000 11111	1000	1000	1000001	· · · · · · · · · · · · · · · · · · ·	2000 11.1			1000 02
NOE	TH PLATTE	DRAIN	AGE						
NON	In PLAITE	DRAIN	AGE			ARKANSAS I			25.0
Kingsley	1900.0 1	450.0	997.7	1, 125. 6*	Twin Lakes	57.9 17.4	13.5 5.8	38.7 15.3	7.9
Sutherland	70. 0	40.9	49.0	49.4	Sugar Loaf Clear Creek	17.4	5. 0	9.4	5.1
Minatare	58.8	33.5	33.5	22.8	Meredith	41.9	26.0	28.1	17.5
Alcova	190. 3	123.6	188.1	81.9	Horse Creek	26.9	2.6	22.7	9.2
Seminoe	1,011.6	701.6	601.6	351.6*	Adobe Creek	61.6	29.3	58.5	26.0
Guernsey	44.8	33.1	29, 1	36.1	Cucharas	40.0	6.0	17.7	5.9
Pathfinder	1,015.9	144.5	700.0	396.8	John Martin	655.0	250.5	270.8	69.4*
Kortes	4.7	4.6	4.5	*	Great Plains	150.0	112.3	45.0	51.6
					Model	15.0	4.5	6.6	3.7
SO	UTH PLATTI	E DRAI	NAGE		Conchas (NM)	600.0	358.9	240.8	275.7*
					W C Austin	151.0			*
Windsor	18.6	12.0	14.0	9.5	Criuotin	101.0			
Cache la Poudre	9.5	8.4	8.3	6.4		COLORADO	DRAINA	AGE	
Fossil Creek	11.6	7.2	7. i	6.7	Taylor Park	106.2	54.3	84.6	61.7
Terry Lake	8.2	4.6	5.8	4.2	Vallecito	126.3	46.1	63.6	40.1*
Halligan	6.4	4.8	6.0	1.7	Groundhog	21.7	5.5	15.3	9.0
Chambers Lake	8.8	2.0	2.2	2.4	Granby	465.6	267.9	309.3	*
Cobb Lake	34.3	18.0	18.9	4.6	Green Mountair		53.4	91.7	68.1*
Black Hollow	8.0	3. 7	3,7	3.3	Lake Mead				19438.0
Carter	108.9	72.4	90.3	*	Lake Havasu	688.0	547.0	582.2	554.6*
Horsetooth	143.5	84.8	105.0	*	Lake Mohave	1,810.3	1696.8	1743.1	1045.2*
Lake Loveland	14.3	10.0	8.7	4.4		-,			
Boyd Lake	44.0	42.2	42.2	16.0	RIO	GRANDE (C	OLO) DE	RAIN AGE	
Lone Tree	9.2	6.9	7.3	5.3	Rio Grande	51.1	6.2	41.6	15.0
Mariano	5.4	3.8	5 0	2.1	Santa Maria	43.6	7.7	11.9	10.1
Union	12.7	9.0	12.3	6,8	Sanchez	103.2	25.4	32.1	. 12.5
Eleven Mile	81.9	97.8	92.5	75.5	Terrace	17.7	2.4	1.4	3.3
Cheesman	79.0	56.9	79.1	55.3	Continental	26.7	2.1	12.0	7.2
Marston Antero	18.9	14.8	14.7	14.7	Platoro	60.0	34.0	30.4	*
Gross	33.0	15.7	17.9	13.8					
Barr Lake	43.1	18.7	37.6		RIO	GRANDE (N	. M. ) DI	RAINAGE	
Milton	32.2 24.4	20.3	25.0	19.7 10.5	Elephant Butte	2,273.7	945.0	752.8	889.3
Standley	18.5	15.4	16.0 15.9	10.8	Caballo	365.0	239.0	107.8	194.7
Marshall	10.3	9, 2 2, 0	6.8	2.3	El Vado	226.0	2.7	24.2	50.6
Horse Creek	20.6		12.7	9.0	Alamogordo	128.0	123.5	108.0	67.2
Riverside	57.5	9.5	55.0	43.2	McMillan-Avalo		41.8	17.9	13.5
Empire	37. 7	49.4 31.9	30.8	27.8	Red Bluff(Tex)	307.0			*
Jackson Lake	35.4	32.0	30.0	31.1					
Prewitt	32.8	22.1	28.1	21.0		ALT AND GI			
Point of Rocks	70.0	67.0	64.6	51.4	Roosevelt	1,382.0	450.6	56.0	422.4
Julesburg	28.2	21.0	19.8	20.3	Horse Mesa	245.1	238.3	232.2	179.5
	20.2	21.0	10,0	20,0	Mormon Flat	58.0	57.0	52.6	29.3
					Saguaro	70.0	64.1	63.6	19.2
* Shorter Perio	ds				Bartlett	180.0	97.6	139.4	48.7
					Horseshoe	143.0	25.4	12.8	15.5
					Carl Pleasant San Carlos	163.8 1.205.0	18.5 108.0	12.6 63.6	21.1 167.1

#### VALLEY PRECIPITATION 1

## Division Averages and Departures $\frac{3}{}$ March 1, 1959

	Fa	.11	Wi	nter		Fall		V	/inter
DRAINAGE	SeptC	OctNov.	Dec.	- Jan.	DRAINAGE	Sept.	-OctNov.	Dec.	- Jan. 2/
DIVISIONS	Avg.	Dept.	Avg.	Dept. <sup>2</sup> /	DIVISIONS	Avg.	Dept.	Avg.	Dept.
North Platte River, Wyo.	1.27	-1.47	1.33	42	Colorado River, Ariz.				
South Platte River	2.08	84	1.44	<b>∤.38</b>	Gila River, N.M.	7.18	<b>‡3.19</b>	. 11	-1.64
Arkansas River	1.97	82	1.51	<i>∤</i> .17	Canadian River, N.M.	2.55	-1.32	1.24	<i>f</i> .04
Colorado River	3.3 <b>2</b>	90	1.76	-1.29	Rio Grande, Colo.	2.23	57	.57	46
Green River, Wyo.	1.45	-1.07	. 84	30	Rio Grande, (N), N. M.	4.11	<i>f</i> .43	.54	-1.40
San Juan River, N.M.	3.40	<i>f</i> .57	. 54	97	Rio Grande (S), N. M.	4.46	-2.01	. 35	63
					Pecos River, N.M.	4.47	-1.53	. 50	76
1/ Preliminary analysis by	y U.S.We	ather Bure	au fro	m data	2/ Departure from aver				
furnished by Meteorolog Bureau	gical Serv	rice & U. S	. Wea	ther	3/ Selected Stations	age			

## AVAILABLE SOIL MOISTURE IN INCHES\* March 1, 1959

DRAINAGE BASIN		Soil	Moistu	re Conte	nt in Inches	DRAINAGE BASIN		Soil N	loisture		in Inches
AND	Profile	Cap.	1959	1958	1957	AND	Profile	Cap.	1959	1958	1957
STATION	Depth	In.	In.	In.	In.	STATION	Depth	In.	In.	In.	In.
NORTH PLATTE	, t					UPPER COLORADO			0.0		0, 3
Columbine Lodge	48	8.0	0.2	4.5	0.1	Vail Pass	48"	8.0	0.6	5.4	1.7
Willow Creek	11	7.0	0.7	6.9	2.2	Ranch Creek	11	7.0	4.3	5.8	
Windy Point	11					Hairpin		8.0	0.5	6.4	0.0
Barrett	11					Vasquez	121	7.0	3.8	5.9	1.5
						Gore Pass	. "	7.0	0.1	1.9	0.7
SOUTH PLATTE						Blue River	11	7.0	0.4	6.8	0.3
Red Feather	11	6.0	0.1	1.5	0.4						
Chambers Lake		7.0	0.7	3.4	2.2	GUNNISON					- 0
Deer Ridge	11	6.0	0.3	1.0	0.7	Monarch Pass	11	8.0	7.3	7.2	3, 8
Hidden Valley	11	8.0	0.8	5.3	1.7						
Longs Peak	11	7.0	0.2	0.8	0.5	RIO GRANDE (Colo.	. )				
University Camp	11	7.0	0.3	1.4	0.8	Bristol View	48	7.0			
Berthoud Falls	11	6.0	2.6	3.1	0.4	Wolf Creek Pass	**	9.0	0.5	6.1	0.7
Alma	11	7.0	0.3	4.4	0.7	River Springs	11	7.0	0.3	1.9	2.5
Kenosha Pass	11	7.0	0. 2	6.3	0.9	La Veta Pass	181	8.0	0.1	2.4	2.8
					.,						
ARKANSAS						RIO GRANDE (N. M.	.)				
Leadville	11	7.0	0.5	2.7	1.2	Red River **	11	7.0	0.1	6.4	0.6
Lake Creek	11	6.0	2.9	5.1	3.0	Tres Ritos **	11	7.0	0.3	6.3	2. 1
Garfield	11	7.0	2.8	6.4	3.4	Bateman **	**	8.0	0.8	7.7	0.7
						Chamita ***	11	8.0	0.6	5.6	0.8
ROARING FORK											
Placita	11	8.0	0.1	1.2	0.9						
Maroon	11	8.0	0.1	2.9	0.4						

\*Measurements made in November 1958. Three to six years of record. Interpretation methods are tentative.

\*\* March 1, 1959.

#### SNOW COURSE MEASUREMENTS

March 1, 1959

SNOW COURSE		Depth 1959		ater Co n Inches		Years	SNOW COURSE		Depth 1959		er Conte nches	ent	Years of
JAOW COURSE	Date		1959	1958		Record		Date	Inches			Avg.	Record
Pi			R DRAI	NAGE		**		PLAT'	ΓE RIV	ER DR	AINAGE		**
	J												
SWEETWATER RIV							CLEAR CREEK	- 1					
Grannier Meadows(v		28	6.6	6.7	11.5	22	Loveland Pass Grizzly Peak*	2/25	52	13.7	12.1	11.8	22
South Pass* (w)	3/2	32	8.4	7.2	11.8	19 8	Empire	2/25	56	14.5	13.7	15.2	.17
Larsen Creek (w)	3/2	34	8.5	8.4	10.8	0	Berthoud Falls	$\frac{3}{2}$	31 53	7.2 16.8	4.5 11.1	5.8	10 8
NO. PLATTE RIVE	D CI						Clear Creek	2/27	52	12.4	12.9	11.2 12.0	8
Cameron Pass (a)	2/28	67	19.8	18.0	18.5	22		2/21	02	12. 4	12.0	12.0	•
Park View	2/27	28	6.6	5.2	7.7	23	SOUTH PLATTE	RIVÉF	<b>1</b>				
Columbine Lodge	2/27	77	22.2	21.8	18.4	23	Hoosier Pass	2/28	49	12.9	11.7	9.3	22
Willow Cr. Pass*	2/27	37	8.6	8.8	10.4	21	Jefferson Cr.	2/27	37	8.9	8.3	6.9	19
Northgate	2/24	23	5.2	4.3	5.5	9	Geneva Park	2/27	20	4.5	1.8	3.3	9
Bottle Creek (w)	2/25	39	11.3	9.7	11.4	21						_	
Webber Spring (w)	2/25	45	12.5	12.6	14.9	21	A	RKAN	SAS RIV	ER DI	RAINAG	E	
Old Battle (w)	2/25	69	20.2	26.6	25.5	22	ADVANCAC DIVE	n					
N. French Creek(w)				31.2	23.2	21	ARKANSAS RIVE		4.1	10.0			0.0
N. Barrett Creek(w)	(a)			20.6	15.2	22	Tennessee Pass Twin Lakes T.	2/28	41	10.2	8.0	7.5	23
Ryan Park (w)(a)		NC	NC	10. 2	8.8	22	La Veta Pass*	2/28	37	7.8	12.1	8.9	21
Spring Creek (w)	3/2	NS 46	NS 13, 4	NS 11.0	12.5	10	4 Mile Park	$\frac{2}{26}$	24 23	6.7	6.1	8.3	21
Albany (w) (a) LaBonte (w)	$\frac{3}{2}$	21	4.4	3.4	5.5	10	Fremont Pass	2/26	54	4.9 12.9	4.5 13.3	3.5 12.9	20 23
Boxelder (w)	3/2	27	5.2	4.0	4.6	9	Garfield	2/26	49	12.3	NS	12.9	0
Doxerder (w)	0/2	21	0.2	1.0	1.0	Ů	Monarch Pass	2/27	59	14.4	14.7	14.5	16
LARAMIE RIVER							Saint Elmo (a)	2/28	30	6.3	8.2	9.9	9
Roach	Est.	52	16.0	14.8	15.1	18	Timberline	3/3	71	18.0	14.1	15.8	8
Deadman Hill*(a)	Est.	48	14.0	12.5	11.4	22	East Fork	2/26	40	8.9	5.4		6
McIntyre	3/1	37	9.5	7.3	9.0	10	Westcliffe	2/27	28	7.0	4.6		6
Brooklyn Lake(w)	2/27	65	20.3	20.2	17.9	22	Bourbon	3/2	19	4.7	6.2		2
Fox Park(w)	2/25	23	5.6	7.0	5.5	22							
Pole Mtn. * (w)	2/26	18	3.6	2.1	4.3	23	. (	COLOR	ADO R	IVER I	DRAINA	GE	
Libby Lodge(w)	2/27	36	10.0	8.9	8.3	21							
Hairpin Turn (w)	2/27	38	10.8	9.7	9.2	21	COLORADO RIVE						
Albany (w)(a)	3/2	46	13.4	11.0	12.5	10	Cameron Pass*(a	, ,	67	19.8	18.0	18.5	22
							Phantom Valley	2/27	37	10.9	7.4	8.9	23
POUDRE RIVER	<b>5</b>	0.77	10.0	10.0	10.5		Hoosier Pass* Berthoud Pass	2/28	49	12.9	11.7	9.3	22
Cameron Pass (a)	Est	67	19.8 11.7	18.0 8.1	18.5 7.2	22	Tennessee Pass	2/26 2/28	54	13.5	12.6	12.0	23
Chambers Lake	2/28 2/28	35 15	3.9	3.9	2. 1	21	M. Fork Camp G		41 40	10.2	12.1 6.4	7.5 8.2	23 23
Big South Deadman Hill (a)	Est.	48	14.0	12.5	11.4	22	Fiddler Gulch	Est.	46	13.7	14.2	12.9	22
Lake Irene*	Est.	61	19.0	18.8	17.8	21	Lulu	2/28	62	15.9	17.0	14.2	21
Hour Glass Lake	2/28	25	5.3	4.0	6.0	19	Willow Creek P.	2/27	37	8.6	8.8	10.4	21
Red Feather	2/26	26	7.5	2.8		9	N. Inlet Grand L.		40	10.1	5.2	7.8	20
Lost Lake	2/28	47	14.2	9.8	8.9	7	Lake Irene	Est	61	19.0	18.8	17.8	21
	•						Arrow	2/27	48	11.9	8.1	8.5	21
BIG THOMPSON RIV	ER						Lapland	3/3.	44	11.0	8.6	9.9	19
Lake Irene*	Est.	61	19.0	18.8	17.8	21	Fremont Pass	2/26	54	12.9	13.3	12.9	23
Hidden Valley	2/27	42	9.8	5.5	9.4	18	Lynx Pass	2/. 26	41	10.1	9.8	10.5	23
Deer Ridge	2/27	24	5.9	1.8	5.1	10	Shrine Pass	2/26	54	13.8	15.1	13.9	17
Longs Peak	3/1	35	10.7	6.4	8.5	8	Grizzly Peak	2/25	56	14.5	13.7	15.2	17
Two-Mile	2/26	49	13.0	9.9		7	Glen-Mar Ranch	2/26	34	7.6	5.3	8.2	12
Im IIth A ray in Hirrin							Monarch Lake	3/1	37	10.4	6. 1	11.5	11
ST. VRAIN RIVER	T7 -4	477	10.4	0 0	11 1	99 1	Granby	2/27	30	6.4	5.6	6.4	10
Wild Basin	Est.	47	12.4	8. 0	11.1	22 <sup>1</sup> 10	Grand Lake Berthoud Summit	$\frac{2}{28}$ $\frac{3}{2}$	39 67	9.3	4.8 15.8	8.0 14.3	10 8
Copeland Lake Ward	$\frac{2}{27}$ $\frac{2}{26}$	20 29	5.4 7.7	2.7 3.2	5. 1 5. 4	9	Frazer View	3/2	50	15.2	9.2	9.0	8
waru	2/20	45	1. 1	3.2	J. 4		Gore Pass	2/26	35	8.6	8.2	8. 0	8
BOULDER CREEK							Frisco	2'25	32	7.7	6.9	7.4	8
University Camp	2/27	78	25.7	12.1	16.7	22	Snake River	2/25	34	7.5	7. 1	7.3	8
Moffat	3/2	48	. 16. 0	10.4	7. 2	9	Summit Ranch	-, -0	NS	NS			
Boulder Falls	2/27	49	14.2	7.2		9	Vail Pass	2/26	56	14. 1	15.9		6
	, - ,			_			Pando	2/26	35	8. 0	7.9		6
							Kokomo	2/25	39	7.5	9.7		6
On adjacent drain	age						Milner	,	NS	NS	12.5		7
** Averages for cour		th les	s than 1	5 years	of rec	ord	Blue River	2/28	39	10.3	9.2		2
during the period							Jones Pass	2/27	50	11.0	11.2		2
NS No Survey							Ranch Creek	2/27	38	9.4	5.4		2
a) Air observed				·			Vasquez Creek	2/26	46	11.5	8.9		2
w) Wyoming													

#### SNOW COURSE MEASUREMENTS

March 1, 1959

		Depth		ter Con	ntent	Years			epth	Wa	ter Cont	ent	Years
SNOW COURSE	Date	1959 Inches		Inches 1958	Ava	of Record	SNOW COURSE	Date In	959	In 1959	Inches 1958	1	of
	Date	menes	1000	1000	11.5.	**		Date III	ches	1333	1330	ivg.	Record
CC	OLORA	DO RIV	VER DI	RAINAG	E		COL	ORADO :	RIVER	DRAIN	NAGE		
ROARING FORK							DOLORES RIVER						
Ind. Pass Tunnel	2/28	57	15.8	15.2	13.8	23	Rico	2/27	18	5.6	7.9	7.0	19
North Lost Trail(a	1)2/27	44 NS	12.8 NS	12.0 5.8	11.1	23 14	Telluride Lizard Head	3/2	27 43	6.0	8.5	7.3	20
Nast Ivanhoe	2/27	55	13.3	13.0		9	Trout Lake	$\frac{2}{27}$ 3/2	37	12.1 9.5	14.5 12.5	12.8 11.7	17 10
Lift	2/26	45	10.5	13.3		3	11out Danc	0/2	01	0.0	12.0	11. 1	10
	·						SAN RAFAEL RIVE	R					
YAMPA RIVER	- /		40				Hntngtn-Horseshoe	2/24	65	18.6	26.7	22.4	9
Dry Lake (a)	2/28	67 77	18.5 22.2	22.0	16.3	20 23	Seeley Creek R.S.	2/25	34	9.9	17.2	14.3	7
Columbine Lodge* Elk River	2/28	66	19.0	21.8 13.4	18.4 14.7	20	VIRGIN RIVER						
Lynx Pass*	2/26	41	10.1	9.8	10.5	23	Long Valley Jnct.	2/25	18	4.3	0.9	3.8	10
Routt Line	-,	NS	NS	NS		7	Harris Flat R.S.	2/25	26	6.6	7.8	9.6	16
Rabbit Ears		NS	NS	NS		7	Duck Creek R. S.	2/25	40	9.1	14.2	13.8	15
Yampa View	3/2	45	13.8	12.4	12.3	8	Cedar Breaks	2/18	43	10.4	20.8	18.8	13
Flat Top	-/	NS	NS	NS			Webster Flats	2/20	39	9.8	15.9	14.3	9
Bear River	$\frac{2}{27}$	45 44	10.9 12.0	NS 11.7		2	COLOBADO D (C.D.	TITELET					
Clark (a) Old Battle	$\frac{2}{20}$	69	20.2	26.6	25.5	22	COLORADO R. (S. E. LaSal Mt.	<b>UTAH)</b> 2/19	20	4.1	10.7	10.1	7
Old Battle	2/20	00	20.2	20.0	20.0	22	Buckboard Flat	2/19	28	5.9	12.9		3
WHITE RIVER								,					
Burro Mountain	2/27	58	17.9	19.3	14.9	23	PRICE RIVER						
Rio Blanco	3/1	44	14.4	14.3	12.8	20	Indian Canyon*	2/27	29	6.5	8.0	8.9	21
DI 4 ME 4 II AD DEII							Gooseberry Res.	2/24	54	13.7	16.4	18.5	14
PLATEAU CREEK Mesa Lakes	3/1	42	12.0	22. 1	12.9	22	Staley Ranch Dry Valley Divide	$\frac{2}{25}$ $\frac{2}{25}$	20 30	4.2 7.2	7.8 11.1	7.0 9.8	18 18
Trickle Divide(a)	2/27	68	19.8	29.5	22.4	19	Hntngtn-Horseshoe	2/24	65	18.6	26.7	22.4	9
TIOMIO DIVIGO(=)	-,						Mud Creek	2/25	41	8.9	12.8		
GUNNISON RIVER													
Crested Butte	2/26	40	10.4	9.3	12.0	23	DUCHESNE RIVER	0/00	0.5				
Park Cone	$\frac{2}{27}$	33 53	6.8 15.3	7.3 23.6	8.4 17.9	22 22	Lake Fork Mt. Paradise Park	$\frac{2}{26}$ $\frac{2}{25}$	35 32	8.2 6.5	9.2	10.2	8
Alexander Lake(a) Ironton Park	2/25	36	9.2	NS	11. 1	21	Mosby Mt. (L)	2/25	27	5.3	9.2 7.9	9.7	9
Trickle Divide(a)	2/27	68	19.8	29.5	22.4	19	Brown Duck Lake	2/20	NS	NS	NS		
Park Reservoir(a)	2/27	61	17.2	28.0	21.1	19	Indian Canyon	2/27	29	6.5	8.0	8.9	21
Porphyry Creek	2/27	52	12.9	14.8	13.5	18							
Kannah Cr.	0/00	NS	NS	NS			UPPER GREEN RIVE	ER (UTAI		N.G	<b>N</b> .C		
Lake City Tomichi	$\frac{2}{28}$ $\frac{2}{27}$	29 44	6.3 10.8	13.0 NS	6.4	10	Hewinta R. S.		NS NS	NS NS	NS NS		
Cochetopa Pass*	2/26	24	5.0	5.1	4.2	10	Hole-in-Rock King's Cabin (U)	2/24	36	7.4	6.3	10.0	10
McClure Pass (a)	2/27	52	16.5	15.5	12.7	9	King's Cabin (L)	2/24	32	6.8	6.0	8.8	10
Red Mt. Pass	3/2	75	22.3	34.2	26.1	7							
Blue Mesa	2/25	31	6.0	NS			GREEN RIVER (WYO	MING					
							Dutch Joe (w)	2/25	33	6.5	7.6	8.1	7
SAN JUAN RIVER							Mulligan Park (w)	2/24	36	9.7	8.1	9.5	17
Wolf Creek Pass*	2/26	54	15.3	20.6	24.3	22	Kendall R. S.(w)	2/25	33	8.9	7.5	10.6	18
Upper San Juan	2/26	67	18.1	27.3	27.0	21	Loomis Park (w)	2/26	56	16.0	13.4	15.6	18
Granite Peaks	2/28	12	3.0	4.8	7.4	18	Snyder Basin R. S(w)	$\frac{2}{27}$	46 51	12.4 14.6	16. 1 18. 6		3 4
La Plata Wolf Creek Summi	+2/26	NS 55	NS 12.3	NS 23.6	22. 1	8	Piney-LaBarge (w)	4/41	31	14.0	10.0		*
Chama Divide*	2/28	2	.4	4.2	5. 2	19	GILA RIVER						
Chamita*	2/28	24	4.9	7.4	10.0	18	Frisco Divide		3	0.9	2.4	2.0	21
							State Line		2	0.4	1.4	2.8	21
ANIMAS RIVER	- 1						Taylor Creek		0	0.0	0.5	0.4	16
Silverton Sub. S.	3/2	16	3.6	NS	5.3	17	Inman		0	0.0	0.5	0.5	12
Ironton Park* Cascade	$\frac{2}{25}$	36 25	9.2	NS 10.5	11. 1	21	Nutrioso Beaver Head		0	0.0	0.7	2.2	21 20
Spud Mt.	$\frac{3}{2}$	25 43	7.4 12.5	10.5 27.4	10.9 23.4	20 8	Coronado Trail		0	0.0	1.6 1.0	3. 4 3. 5	21
Molas Lake	3/2	25	7. 0	15.3	14.5	8	Rose Canyon		0	0.0		0.7	10
Howardville	3/2	31	7.8	13.8	10.5	8	Bear Wallow		4	1.3		2.6	10
Mineral Creek	3/2	42	11.4	17.8	13.7	8							
Red Mt. Pass*	3. 2	75	22.3	34.2	26.1	8							

<sup>\*</sup> On adjacent drainage

<sup>\*\*</sup> Averages for courses with less than 15 years of record during the period 1938-52 are partially estimated.

MS No Survey

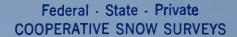
<sup>(</sup>a) Air observed (w) Wyoming

#### SNOW COURSE MEASUREMENTS

March 1, 1959

	Depth '		er Conto	ent	Years of	SNOW COURSE		Depth 1959		ater Con n In <b>c</b> hes		Years of
SNOW COURSE	1959 Date Inches		Inches 1958	Avg.	Record	SNOW COURSE		Inches	1959	1958		Recor
	Date Inches	1000			**						0:	**
CO	LORADO RI	VER DR	AINAG	E			RIO GR	RANDE	DRAIN	AGE		
SALT RIVER						RIO GRANDE IN COLORADO						
Forest Dale	1	0.3	0.0	1.2	20	Pyramid		NS	NS	NS		
McNary	3	0.8	T	2.8	20	Spring Creek	2/28	34	7.5	NS	~-	==
Nutrioso	0	0.0	0.7	2.2	21	Pool Table	2/27	21	4.0	5.3	4, 5	
Coronado Trail	0	0.0	1.0	3.5	21	L. Humphreys	2/27	27	6.3 5.0	6.6 5.1	5, 7	
Milk Ranch	0	0.0	Т	0.8	18	Cochetopa	$\frac{2}{26}$	24 75	22.3	34.2	4, 2 26, 1	
Workman Creek	5	1 9	NS	1.5	6 8	Red Mt.	2/27	34	7.5	10.1	8,	
Maverick Fork	10	2.3	9,6	7.8 5.9	8 9	Porcupine Wolf Creek Sumn		55	12.3	23, 6	22,	
Baldy	13	2.8	7.7	6.2	9	Hiway	2/26	46	10.7	20.9	e a e a i	2
Fort Apache	18	4.6	6.8 2.0	2,5	8	Pass Creek	2/26	30	6.8	6.9	***	2
Pacheta	0	0.0	2.0	2.0	Ü	rass Creek	-,		-, -			ŭ
						ALAMOSA RIVER						
VERDE RIVER						Silver Lakes	2/27	17	4.0	5.8	5.	
Iron Springs*	7	2.0	0.0	1.2	13	Summitville	2/26	42	8.7	13.4	16.	18
Camp Wood	4	2.5	0.0	0.8	13							
Mingus Mountain	5	1.7	T	1. 1	12	CONEJOS RIVER	0/0=	4.0			= :	
Mormon Lake*	7	2.1	0.8	4.9	12	River Springs	2/25	19	6.1	3.6	7.	
Fort Valley*	8	2.7	0.3	2.3	12	Cumbres Pass(a)		30	8.7 8.5	15.6 10.3	19.	5 22
Chalendar*	12	3.4	T	2.8	12	Platoro	2/26	37 NS	NS	5.6	9, (	
Munds Park	4	1.7	T	1.0	8	West Conejos	2/1	42	11.8	16.0	20,	
Casner Park	8	2.3	Т	2.6	8	La Manger (a)	3/1	44	11.0	10.0	40;	9 10
Mormon Mt.	10	2.9	1.6	4.6	9 6	SANCRE DE CRI	TTO DA1	NOT 10	101 On 1	DO1		
Happy Jack	0	0.0	0.0	3.7	0	SANGRE DE CRIS	2/26	24	6.7	6, 1	8.	3 21
	00 DIVID					Culebra	3/3	21	4. 1	9.6	8.	
LITTLE COLORAI	O RIVER	0.3	0.0	1, 2	20	Juliona	0,0					
Forest Dale*	3	0.3	T. 0. 0	2.8	20	CHAMA RIVER						
McNary Nutrioso*	0	0.0	0.7	2.2	21	Cumbres Pass(a)	3/1	30	8.7	15.6	19.	5 22
Mormon Lake	7	2.1	0.8	4.9	12	Payrole (a)	3/1	20	6.0	11.5	9.	2 18
Fort Valley	8	2.7	0.3	2.3	12	Chama Divide	2/28	2	. 4	4.2	5.	2 19
Mormon Mt.	10	2, 9	1.6	4,6	9	Chamita	2/28	24	4.9	7.4		
Happy Jack	0	0.0	0.0	3.7	6	Bateman	2/27	32	7.5	11. 1		9
Gentry	9	2.9	0.8	1.4	7							
Heber	7	2.4	0.7	2.1	8	PECOS RIVER						
Canyon Creek	7	2.3	0.6			Panchuela	3/3	8	2.0	2.9		
·						Big Tesuque	3/2	6	1.3	6.2		6 17
WILLIAMS RIVER					4.0	Rio En Medio*	3/2	16	3.6	10.1		9
Iron Springs	7	2.0	0.0	1.2	13	DIO CDANDE IN	AITTIL B 61	777700				
Camp Wood*	4	2.5	0.0	0.8	13 8	RIO GRANDE IN :	3/3	16	3, 1	6, 2	7.	8 21
Willow Ranch	·		NS	0.2	8	Taos Canyon	3/3	13	4. 0	4.5		
I OWED COLODAT	M DIVED					Aspen Grove	3/2	13	2.3	4.5		6 22
LOWER COLORAL	NS	NS	6.7	9.4	12	Hematite Park*	3/3	8	2.1	6.0	5.	1 21
Bright Angel Grand Canyon	5	1.8	0.5	2.0	12	Tres Ritos	3/2	15	3.4	5.0	6.	
Fort Valley	8	2.7	0.3	2.3		Payrole (a)	3/1	20	6.0	11.5	9.	2 18
Chalender	12	3.4	T	2.8	12	Cordova (a)	3/1	29	8.0	14.5		
Charchaer		• • •	_			Big Tesuque	3/2	6	1.3	6.2		
R	IO GRANDE	DRAIN.	AGE			Elk Cabin	2/27	6	2.0	4.0		
						Rio En Medio	3/2	16	3.6	10.1		0
RIO GRANDE IN C	OLORADO					Quemazon	2/27	27	7.0	11, 1		9
Wolf Creek Pass	2/26 54	15.3	20.6	24.3		Fenton Hill	2/27	9	2.2	6. 2		6
Upper Rio Grande	2/27 31	5.0	11.9	6.9								
Santa Maria	3/1 17	2.0	5.6	5.9	2.2	CANADIAN RIVE		.0	9 1	6.0	5.	1 21
						Hematite Park	3/3	15	2.1	5.0		
						Tres Ritos	3/2	15 29	8.0	14.5		
* On adjacent dra	inage		15			Cordova (a)	3/1	49	0,0	11.0	0.	- '
** Averages for co	ourses with	ess tha	n 15 yea	im stad	ecora							
during the perio	od 1938-52 a	re parti	any est	mated	•							
NS No Survey (a) Air observed												
I'm' WIT ONDET AER												

(a) Air observed



Furnishes the basic data necessary for forecasting water supply for irrigation, domestic and municipal water supply, hydro-electric power generation, navigation, mining and industry

"The Conservation of Water begins with the Snow Survey"